

Amendments to the Claims:

The following listing of claims will replace all prior versions, and listings, of claims in the application:

1-26. (Canceled).

27. (New) An optical control system comprising:

an optical rotatory device having an optical rotatory dispersion characteristic that changes optical rotation angle according to wavelength; and

a spatial optical phase modulator having an entrance surface capable of controlling the wave surface of an incident light wave or an entrance surface having parts capable of individually controlling the wave surface of an incident light wave to adjust the spatial phase distribution of the incident light wave;

wherein the incident light wave passes the optical rotatory device and the spatial optical phase modulator in that order,

the optical rotatory device transmits an incident linearly polarized light wave containing a plurality of wavelength components and gives optical rotation angles respectively to the wavelength components,

the linearly polarized light wave passed through the optical rotatory device is passed through the spatial optical phase modulator with an entrance surface having an spatial optical phase modulation degree or with an entrance surface having parts adjusted respectively to spatial optical phase modulation degrees,

the spatial optical phase modulator produces an outgoing light wave having adjusted ratios of light quantities subject to spatial optical phase modulation for the wavelength components, and

the wavelength components form different far field patterns, respectively.

28. (New) The optical control system according to claim 27, wherein the spatial optical phase modulator is a two-dimensional optical phase modulator that modulates the phase of only a polarized light component polarized in a direction parallel to one of two perpendicularly intersecting coordinate axes defining a plane perpendicular to the optical axis of the incident light wave.

29. (New) The optical control system according to claim 27, wherein the spatial optical phase modulator is a parallel oriented nematic liquid crystal spatial light modulator.

30. (New) The optical control system according to claim 27, wherein the azimuth rotator gives different polarization angles respectively to the polarized wavelength components of the incident light wave by using an optically rotatory dispersion effect to emit a light wave having different ratios between two polarized components distributed along perpendicularly intersecting reference coordinate axes contained in a plane perpendicular to the optical axis for the wavelength components, and

the spatial optical phase modulator receives the light wave emerging from the azimuth rotator and emits an outgoing light wave having an adjusted ratio between polarized components undergone spatial phase modulation and having light surfaces having shaped spatial shape and polarized components not undergone spatial phase modulation and having wave surfaces having unchanged spatial shapes.

31. (New) The optical control system according to claim 27, wherein the spatial phase modulating action of the spatial light modulator forms a spiral spatial optical phase

distribution in the outgoing light wave and a phase shift for one full turn about the optical axis is approximately equal to an integral multiple of 2π rad.

32. (New) The optical control system according to claim 27 further comprising a wavelength phase modulator capable of adjusting the respective optical phases of the wavelength components.

33. (New) The optical control system according to claim 32, wherein the adjusting operation of the wavelength phase modulator for the adjustment of the optical phases of the wavelength components is performed simultaneously with the adjusting operation the optical rotatory device, the spatial light modulator or the spatial optical phase modulator to control the phases, and the spatial light intensity distributions or spatial optical phase distributions of the wavelength components of the outgoing light wave simultaneously.

34. (New) The optical control system according to claim 27, wherein the effect of combination of the plurality of wavelength components of the outgoing light wave respectively having different spatial distributions is applied to various process control purposes.

35. (New) The optical control system according to 34 wherein the laser plasma x-ray generating rate of a laser plasma x-ray generator is controlled by making the leading end of a light pulse first arriving at a target of the laser plasma x-ray generator have a spatial light intensity distribution concentrating energy on a central part of the optical axis, and by making a series of light pulses subsequently reaching the target have annular spatial distributions having a central part of a low light intensity and a peripheral part of a high light intensity.

36. (New) The optical control system according to claim 34, wherein a wavelength component of the same wavelength as a fluorescent light wave in a broad-band spectrum is used for fluorescence suppression, and wavelength components of other wavelengths are used as fluorescence excitation light waves in an ultrahigh-resolution scanning fluorescence microscope of a STED system.

37. (New) An optical control method comprising the steps of:
making a linearly polarized light wave containing a plurality of wavelength components fall on an optical rotatory device having an optical rotatory dispersion characteristic to give different polarization angles respectively to the wavelength components;
passing the linearly polarized light wave passed through the optical rotatory device through a spatial optical phase modulator to change the spatial optical phase of the incident light wave on an entrance surface or the spatial optical phases of the incident light wave on parts of an entrance surface; and
emitting an outgoing light wave containing wavelength components having controlled spatial light intensity distributions.

38. (New) The optical control method according to claim 37 further comprising the step of adjusting the respective optical phases of the wavelength components by a wavelength phase modulator.

39. (New) The optical control method according to claim 38, wherein spatial optical phase distributions are simultaneously controlled.